

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

VERTICAL DRAIN

(No.)

CODE 630

DEFINITION

A well, pipe, pit, or bore in porous, underground strata into which drainage water can be discharged.

PURPOSE

Provide an outlet for drainage water from a surface or subsurface drainage system.

CONDITIONS WHERE PRACTICE APPLIES

This practice is applicable in locations where the underlying strata can receive, transmit, or store the design drainage flow; and other drainage outlets are not available and cannot be provided at a reasonable cost. This practice is also applicable where natural “sinkholes” are the vertical drain, and erosion control or treatment of surface runoff is a concern.

This practice is applicable only in locations where a determination has been made that it is not contrary to State laws or regulations, and that it will not cause pollution of underground waters. The Tennessee Department of Environment and Conservation (TDEC), Division of Water Supply, regulates these types of systems under Chapter 1200-4-6, Underground Injection Control.

CRITERIA

The number, size, and location of vertical drains shall be adequate to discharge the design drainage flow into the underlying stratum or strata, and shall be based on a field determination of the depth, permeability, porosity, thickness, and extent of the strata.

The minimum diameter of shallow uncased wells shall be 6 inches and of deep-cased wells, 4 inches.

A suitable filter system, desilting basin, or other means necessary for removing sediment from the water shall be provided before it enters the well.

Well casings shall be of adequate strength and longevity to serve planned needs.

CONSIDERATIONS

Significant diversions into underground storage areas may have an effect on the peak discharge rate from a watershed. Planners should consider this, and take steps to mitigate any potential negative effects this may have on riparian habitat downstream from the structure.

Significant additions to subsurface water sources may raise local water tables or

cause undesirable surface discharges down gradient from the vertical drain.

Additional discharge to sinkholes can rapidly accelerate the enlargement of the sinkhole and have significant effects on the surrounding landscape.

Assume all sinkholes in a drainage basin are hydraulically connected.

TDEC may at its discretion require any of the following:

- Pretreatment system.
- Initial and/or periodic testing.
- Monitoring of the drainage from the practice and receiving aquifer.
- Plugging and abandonment.

PLANS AND SPECIFICATIONS

Plans and specifications for installing vertical drains shall be in keeping with this standard, and shall describe the requirements for properly installing the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

The inlets to vertical drains shall be inspected periodically to ensure that they are not plugged or damaged. Vegetative filters, sediment basins, and other filters shall be maintained as per Operation and Maintenance requirements for each of the respective practice standards.

REFERENCES

Tennessee Department of Environment and Conservation, Division of Water Supply, Rules of the Water Quality Control Board, Chapter 1200-4-6, *Underground Injection Control*.

White, W.B., Geomorphology and Hydrology of Karst Terrains, Oxford University Press, NY, NY, 1988.